

Customer No.: 31561  
Application No.: 10/707,867  
Docket No.: 11870-US-PA

### REMARKS

#### Present Status of the Application

The previous Office Action mailed on September 22, 2004 rejected all presently pending claims 1-20. Specifically, the previous Office Action rejected claims 1-4 and 7-9 under 35 U.S.C. 102(b), as being anticipated by Kusumoto et al. (U.S. Patent No. 6,025,794). The previous Office Action also rejected claims 10, 11 and 16-19 under 35 U.S.C. 102(b) as being anticipated by Zhou et al. (U.S. Patent No. 6,124,819). The previous Office Action rejected claims 5, 6 under 35 U.S.C. 103(a), as being unpatentable over Kusumoto et al., as applied to claim as applied to claim 4 above, and further in view of Zhou et al., as applied to claim 10 above. The previous Office Action also rejected claims 12-15 and 20 under 35 U.S.C. 103(a), as being unpatentable over Zhou et al., as applied to claim as applied to claim 11 above, and further in view of Kusumoto et al., as applied to claim 3 above.

The Applicant had carefully considered the previous Office Action and had filed a response thereto on December 15, 2004.

In the final Office Action mailed on March 9, 2005, the Examiner considered the Applicant's arguments filed on December 15, 2004 and asserted that they are not persuasive. The final Office Action responded to and disagreed with the Applicant's arguments. As a result, it is asserted in the final Office Action that the previous Office Action is applying to the final Office Action.

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**Discussion of Final Office Action Rejections**

**Rejections under 35 U.S.C. 102(b) by Kusumoto**

The final Office Action ("the Office Action" hereinafter) rejected claims 1-4 and 7-9 under 35 U.S.C. 102(b), as being anticipated by Kusumoto et al. (U.S. Patent No. 6,025,794; "Kusumoto" hereinafter). Applicant does not agree and respectfully traverse the rejections for at least the reasons set forth below.

For a proper rejection of a claim under 35 U.S.C. Section 102, the cited reference must disclose all elements/features/steps of the claim. See, *e.g.*, *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 7 USPQ2d 1129 (Fed. Cir. 1988).

Independent claim 1 recites the features of the present invention in the following:

1. An automatic threshold voltage control circuit, comprising:

a first capacitor, having a first terminal and a second terminal, wherein said first terminal is coupled to a first voltage level;

a clock generator, for generating a plurality of clock signals; and

a switching capacitor network, coupled to said second terminal of said first capacitor, wherein the switching capacitor network receives an analog signal and said clock signals, stores a portion of charges of said analog signal, and outputs said portion of charges according to said clock signals, and generates a threshold voltage associated with said first capacitor.

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Independent claim 1 is allowable for at least the reason that Kusumoto does not disclose, teach, or suggest all of the features as defined in claim 1 above. More particularly, the reference by Kusumoto does not disclose, teach, or suggest "a switching capacitor network, coupled to said second terminal of said first capacitor, wherein the switching capacitor network receives an analog signal and said clock signals, stores a portion of charges of said analog signal, and outputs said portion of charges according to said clock signals, and generates a threshold voltage associated with said first capacitor" as defined in claim 1.

First, as defined in claim 1 and as shown in Fig. 3 of the present application, the threshold voltage in claim 1 is "associated with the first capacitor". Namely, the threshold voltage is provided at the second terminal of the first capacitor. However, the voltage  $V_a$  in the reference by Kusumoto is not provided at a terminal of the corresponding capacitor  $C_0$ .

Second, the threshold voltage in claim 1 is not just a simple "voltage level" as asserted in the Office Action. The threshold voltage in claim 1 is the DC component of the analog signal  $V_{IN}$  and is used in comparison with the analog signal  $V_{IN}$  to convert the analog signal  $V_{IN}$  to a digital signal. However, the signal 241 and the voltage  $V_a$  of the reference disclosed by Kusumoto do not have the same relationship as that between the analog signal  $V_{IN}$  and the threshold voltage in claim 1.

Third, according to Fig. 24 and 25 disclosed by Kusumoto, the voltage  $V_a$  of the reference by Kusumoto is active only in the transfer phase, and is inactive in the holding phase.

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In contrast, the threshold voltage in claim 1 is always active and available and the output voltages are always the comparison results of threshold voltage and input signals.

Thus, Kusumoto does not anticipate claim 1, and the rejection should be withdrawn.

If independent claim 1 is allowable over the prior art of record, then its dependent claims 2-4 and 7-9 are allowable as a matter of law, because these dependent claims contain all features/elements/steps of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally and notwithstanding the foregoing allowability of these dependent claims, the dependent claim recites further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record.

Rejections Under 35 U.S.C. 102(b) by Zhou

The Office Action also rejected claims 10, 11 and 16-19 under 35 U.S.C. 102(b) as being anticipated by Zhou et al. (U.S. Patent No. 6,124,819, "Zhou" hereinafter). Applicant does not agree and respectfully traverse the rejections for at least the reasons set forth below.

For a proper rejection of a claim under 35 U.S.C. Section 102(b), the cited reference must disclose all features of the claim.

Independent claim 10 recites the features of the present invention in the following:

10. An analog-to-digital signal converter circuit, comprising:

a first capacitor, having a first terminal and a second terminal, wherein



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said first terminal is coupled to a first voltage level;

a clock generator, for generating a plurality of clock signals;

a switching capacitor network, coupled to said second terminal of said first capacitor, wherein the switching capacitor network receives an analog signal and said clock signals, said switching capacitor network stores a portion of charges of said analog signal, and outputs said portion of charges according to said clock signals, and generates a threshold voltage associated with said first capacitor; and

a comparator, for comparing said threshold voltage with said analog signal and outputting a digital signal.

Independent claim 10 is allowable for at least the reason that Zhou does not disclose, teach, or suggest all of the features as defined in claim 10 above. More particularly, Zhou does not disclose, teach, or suggest "a switching capacitor network, coupled to said second terminal of said first capacitor, wherein the switching capacitor network receives an analog signal and said clock signals, said switching capacitor network stores a portion of charges of said analog signal, and outputs said portion of charges according to said clock signals, and generates a threshold voltage associated with said first capacitor" as defined in claim 10.

First, as defined in claim 10 and as shown in Fig. 3 of the present application, the threshold voltage in claim 10 is "associated with the first capacitor". Namely, the threshold

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voltage is provided at the second terminal of the first capacitor. However, neither of the output voltages 82 and 78 of the reference by Zhou is provided at a terminal of the corresponding capacitor 50.

Second, the comparator 310 in claim 10 compares the analog signal  $V_{IN}$  with the threshold voltage, whereas the comparator 62 recited by Zhou compares the output voltages 82 and 78, which are asserted in the Office Action to be the "thresh old voltage" in the reference by Zhou, instead of comparing any one of the voltages  $V_S$ ,  $V_R$ ,  $V_{ref}$ , which correspond to the analog signal  $V_{IN}$  in claim 10, with the "thresh old voltage".

Third, according to Fig. 7 and column 8 lines 9~42 of the reference by Zhou, the output of the comparator 62 disclosed by Zhou is active only in the conversion phase, not in the sampling phase. In contrast, the output of the comparator 310 in claim 10 is always active. The operation of the comparator 310 in claim 10 is not divided into phases.

Thus, Zhou does not anticipate claim 10, and the rejection should be withdrawn.

If independent claim 10 is allowable over the prior art of record, then its dependent claims 11 and 16-18 are allowable as a matter of law, because these dependent claims contain all features/elements/steps of their respective independent claim 10. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally and notwithstanding the foregoing allowability of these dependent claims, the dependent claim recites further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record.

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Based on the same reasons as those for the independent claim 10, Zhou does not anticipate independent claim 19, and the rejection should be withdrawn.

Rejections Under 35 U.S.C. 103(a) by Kusumoto in View of Zhou

The Office Action rejected claims 5, 6 under 35 U.S.C. 103(a), as being unpatentable over Kusumoto and further in view of Zhou. Applicant does not agree and respectfully traverse the rejections for at least the reasons set forth below.

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, *e.g.*, *In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981)

Dependent claim 5 is allowable for at least the reason that the combination of Kusumoto in view of Zhou does not disclose, teach, or suggest the features in claim 5. More specifically, claim 5 also includes the features of claim 1. And according to the reasons for claim 1 above, Kusumoto does not disclose, teach, or suggest all the features in claim 1. The assertion in the Office Action that Fig. 6 disclosed by Zhou as applied to claim 10 teaches a switching capacitor network having sensor control switches are MOSFETS does not change the fact that the combination of Kusumoto in view of Zhou does not disclose, teach, or suggest all the features in claim 1 because claim 1 does not include such limitation.

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Consequently, the combination of Kusumoto in view of Zhou does not render claim 5 obvious, and the rejection should be withdrawn.

Because claim 5 is allowable over the prior art of record, its dependent claim 6 is allowable as a matter of law, for at least the reason that the dependent claim contains all features/elements/steps of its independent claim 5. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally and notwithstanding the foregoing allowability of these dependent claims, the dependent claim recites further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record.

Rejections Under 35 U.S.C. 103(a) by Zhou in View of Kusumoto

The Office Action also rejected claims 12-15 and 20 under 35 U.S.C. 103(a), as being unpatentable over Zhou and further in view of Kusumoto. Applicant does not agree and respectfully traverse the rejections for at least the reasons set forth below.

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., *In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981)

Dependent claim 12 is allowable for at least the reason that the combination of Zhou in view of Kusumoto does not disclose, teach, or suggest the features in claim 12. More



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specifically, claim 12 also includes the features of claim 10. And according to the reasons for claim 10 above, Zhou does not disclose, teach, or suggest all the features in claim 10. The assertion in the Office Action that Fig. 25 of Kusumoto as applied to claim 3 discloses wherein said clock signals have a same frequency with different phases respectively does not change the fact that the combination of Zhou in view of Kusumoto does not disclose, teach, or suggest all the features in claim 10 because claim 10 does not include such limitation.

Consequently, the combination of Zhou in view of Kusumoto does not render claim 12 obvious, and the rejection should be withdrawn.

Because claim 12 is allowable over the prior art of record, its dependent claims 13-15 are allowable as a matter of law, for at least the reason that these dependent claims contain all features/elements/steps of their respective independent claim 12. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally and notwithstanding the foregoing allowability of these dependent claims, the dependent claims recite further features and/or combinations of features (as is apparent by examination of the claim itself) that are patentably distinct from the prior art of record.

Finally, the Office Action also renders dependent claim 20 obvious and unpatentable over Fig. 6 and Fig. 7 in Zhou, and further in view of Fig. 25 in Kusumoto. Applicant does not agree and respectfully traverse the rejection for at least the reasons set forth below.

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Dependent claim 20 is allowable for at least the reason that the combination of Zhou in view of Kusumoto does not disclose, teach, or suggest the features in claim 20. More specifically, claim 20 also includes the features of claim 19. And according to the reasons for claim 19 above, Zhou does not disclose, teach, or suggest all the features in claim 19. The assertion in the Office Action that Fig. 25 of Kusumoto as applied to claim 3 discloses wherein said clock signals have a same frequency with different phases respectively does not change the fact that the combination of Zhou in view of Kusumoto does not disclose, teach, or suggest all the features in claim 19 because claim 19 does not include such limitation.

Consequently, the combination of Zhou in view of Kusumoto does not render claim 20 obvious, and the rejection should be withdrawn.

For at least the foregoing reasons, Applicant respectfully submits that independent claims 1, 10, 19 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-9, 11-18 and 20 patently define over the prior art as well.

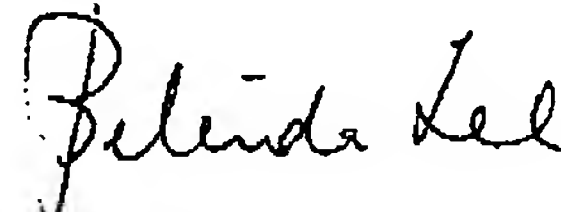
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### CONCLUSION

For at least the foregoing reasons, it is believed that the claims 1-20 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Belinda Lee

Registration No.: 46,863

Jianq Chyun Intellectual Property Office  
7<sup>th</sup> Floor-1, No. 100  
Roosevelt Road, Section 2  
Taipei, 100  
Taiwan  
Tel: 011-886-2-2369-2800  
Fax: 011-886-2-2369-7233  
Email: [belinda@jciigroup.com.tw](mailto:belinda@jciigroup.com.tw)  
[Usa@jciigroup.com.tw](mailto:Usa@jciigroup.com.tw)

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